

ZERO EMISSION BUS REGULATION



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Today's Presentation

- ◆ Urban Transit Bus Regulation / Zero-Emission Bus Regulation
- ◆ Status
- ◆ Recommendations

Urban Transit Bus Regulation

- ◆ Adopted February 2000
 - ◆ Zero-Emission Bus Demonstration & Purchase Requirements
- ◆ Modified June 2004
 - ◆ Changed Implementation Deadlines for ZEB
 - ◆ Require 3 Fuel Cell Buses per ZEB demonstration

Zero Emission Bus Regulation Background

- ◆ Goal - Encourage a fleet dominated by zero emission vehicles
- ◆ Fuel Cell Buses had demonstrated ability to meet performance needs
- ◆ Fuel cell manufacturers anticipated bus cost to be roughly equivalent to overhead trolley by 2004

Zero Emission Bus Regulation Background

- ◆ Fuel cell bus applications would lead light duty applications
 - ◆ Buses could better handle size and weight requirements of initial fuel cells
 - ◆ Buses operated and serviced by trained staff
 - ◆ Buses could be centrally fueled

Zero Emission Bus Regulation

- ◆ ZEB = Hydrogen-Fuel Cell, Electric Trolley, or Battery Electric Bus
- ◆ ZEB Demonstration Project
 - ◆ Diesel Path Transit Agencies
 - ◆ >200 buses as of January 31, 2001
 - ◆ 3 ZEBs per demonstration by Feb. 28, 2006
 - ◆ Final Report by July 31, 2007

Zero Emission Bus Regulation

◆ ZEB Purchase Requirements

◆ Diesel Path

- ◆ Based on number of buses January 1, 2007
- ◆ Agencies with > 200 buses
- ◆ 15% 2008-2015

◆ Alternative Fuel Path

- ◆ Based on number of buses January 1, 2009
- ◆ Agencies with > 200 buses
- ◆ 15% 2010-2015

Affected Transit Agencies

Transit Agency	Fuel Path	January 1, 2005	15 %
Long Beach Transit	D	191	29
Golden Gate Transit	D	221	33
San Mateo County Transit District	D	347	52
Santa Clara Valley Transportation Authority	D	531	80
Alameda/Contra Costa Transit	D	672	101
San Francisco Municipal Railway	D	893	134
North County Transit District	A	155	23
Santa Monica Big Blue Bus	A	174	26
Omnitrans	A	176	26
Sacramento Regional Transit District	A	253	38
Foothill Transit	A	306	46
San Diego Metropolitan Transit System	A	451	68
Orange County Transportation Authority	A	612	92
Los Angeles County MTA	A	2563	384

ZEB Demonstration Status

- ◆ Two required ZEB demonstrations in process
 - ◆ Santa Clara Valley Transit Transportation Authority and San Mateo County Transit District
 - ◆ Alameda/Contra Costa Transit District and Golden Gate Bridge Highway and Transportation District
- ◆ One voluntary ZEB demonstration in process
 - ◆ Sunline Transit in Palm Springs
 - ◆ One fuel cell bus
 - ◆ One hydrogen Internal Combustion bus

ZEB Demonstration Status

- ◆ FCB demonstrations on current regulatory schedule
- ◆ FCBs are operational, meeting street performance goals
- ◆ FCBs are quieter than conventional diesel or CNG buses
- ◆ Public response has been positive or neutral

ZEB Challenges

- ◆ Current Bus cost greater than anticipated
 - ◆ (Positive news - Next bus of current AC Transit release likely to be $\sim 1/3$ less costly)
- ◆ Reliability
- ◆ Availability
- ◆ Fuel cell service life
- ◆ Fueling infrastructure

ZEB Demonstration Conclusion

- ◆ Buses have demonstrated positive operating performance and public acceptance
- ◆ Fuel Cell buses are feasible but not yet commercial
- ◆ Next generation fuel cell bus will likely be a fuel cell dominant electric hybrid

ZEB Regulation

- ◆ Goal remains to commercialize full size Zero Emission Buses as quickly as possible
- ◆ Modifications to regulation are needed
- ◆ Continue demonstrations
- ◆ Add more demonstrations

ZEB Regulation

Modifications Under Consideration

- ◆ Modify purchase requirement
- ◆ Require a second demonstration from Diesel Path transit agencies
- ◆ Require a demonstration from Alternative Fuel Path transit agencies

ZEB Regulation

Additional Considerations

- ◆ Demonstration required to use “Urban Bus”
- ◆ Allow multi agency regional partnership for Urban Bus demonstration
- ◆ Provide status report to the Board in 2009
- ◆ Fully implement purchase requirements 2012

ZEB Regulation

Additional Considerations

- ◆ Shorter buses may be considered under Executive Officer discretion if characteristics similar to “Urban Bus”
 - ◆ Passenger capacity
 - ◆ Operating characteristics (hours of operation, refueling)
 - ◆ Performance (freeway, grades)
 - ◆ Chassis durability and warranty
 - ◆ Other

Additional Consideration

- ◆ Form state wide fuel cell bus working group
 - ◆ Coordinate and leverage statewide effort
 - ◆ Share technology learnings
 - ◆ Discuss resource options

Next Steps

- ◆ ARB will continue current technology review
- ◆ Collect additional input from transit agencies
- ◆ Third workshop in April
- ◆ May Release of Staff Report
- ◆ June Board Hearing

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